



Exelon Generation®

Dresden Nuclear Power Station

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10 CFR 50.73

SVPLTR # 15-0001

January 8, 2015

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Dresden Nuclear Power Station, Unit 2
Renewed Facility Operating License No. DPR-19
NRC Docket No. 50-237

Subject: Licensee Event Report 237/2014-002-02, Unit 2 Reactor Scram due to Main Power Transformer Failure

Enclosed is Licensee Event Report 237/2014-002-02, Unit 2 Reactor Scram due to Main Power Transformer Failure. This report describes an event which is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B).

There are no regulatory commitments contained in this submittal.

Should you have any questions concerning this letter, please contact Mr. Bruce Franzen at (815) 416-2800.

Respectfully,

Shane M. Marik
Site Vice President
Dresden Nuclear Power Station

Enclosure Licensee Event Report 237/2014-002-02

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station

IE22
NRK

**LICENSEE EVENT REPORT (LER)**(See Page 2 for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Dresden Nuclear Power Station, Unit 2

2. DOCKET NUMBER

05000237

3. PAGE

1 OF 3

4. TITLE

Unit 2 Reactor Scram due to Main Power Transformer Failure

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
04	12	2014	2014	002	02	01	08	15	FACILITY NAME	DOCKET NUMBER	
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)								
1			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
10. POWER LEVEL			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)		
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER	
			<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Bruce Franzen – Regulatory Assurance Manager

TELEPHONE NUMBER (Include Area Code)

815-416-2800

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	EL	XFMR	S125	Y					

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On April 12, 2014 at 1012 CDT, the Main Power Transformer for Dresden Unit 2 faulted due to an internal flashover. Due to the trip of the transformer, an automatic reactor protection system actuation occurred. All control rods inserted to their full-in position, and following the reactor trip, all systems operated as expected.

The most probable cause of the transformer failure was determined to be a combination of insulation issues. As a result, the transformer was replaced. Improved manufacturer oversight is being developed and procedures are being revised to ensure critical inspections are implemented during manufacturing.

The safety significance of this event was determined to be minimal based upon the availability of the required systems to safely shut down the reactor.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the system listed in paragraph (a)(2)(iv)(B).

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Dresden Nuclear Power Station, Unit 2	05000237	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 3
		2014	- 002	- 02	

NARRATIVE**PLANT AND SYSTEM IDENTIFICATION**

Dresden Nuclear Power Station (DNPS), Unit 2, is a General Electric Company Boiling Water Reactor with a licensed maximum power level of 2957 megawatts thermal. The Energy Industry Identification System codes used in the text are identified as [XX].

A. Plant Conditions Prior to Event:

Unit: 02	Event Date: 04-12-2014	Event Time: 1012 hours CDT
Reactor Mode: 1	Mode Name: Power Operation	Power Level: 100 percent

B. Description of Event:

On April 12, 2014, at 10:12am, without warning, Dresden Unit-2 Main Power Transformer [EL], Siemens Serial # 1731.658, faulted causing a Reactor Scram. The transformer had been in service for 4 years and 5 months. According to the critical parameters historical data, there were no indications warning of this failure. The result of this Main Power Transformer fault was a turbine-trip/reactor-trip. All control rods [AA] inserted to their full-in position. Following the reactor trip, all systems operated as expected.

The Main Power Transformer failed by flashover from 'A' Phase Low Voltage (LV) Lead to 'A' Phase High Voltage (HV) Coil. The Root Cause investigation was indeterminate, based on Siemens' Final Draft Forensic Analysis Report. Based on a Support Refute analysis of possible failure modes, the "Most Probable" Root Cause was determined to be a combination of insulation issues that appear to be from the manufacturing process.

The transformer was replaced with a transformer of a different design and a different manufacturer. As a further corrective action, improved inspections during transformer manufacturing are to be instituted.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the system listed in paragraph (a)(2)(iv)(B).

C. Cause of Event:

Since a root cause was not identified, a "most probable" Root cause was determined. The Root Cause team evaluated the potential failure modes based on the Siemens Forensic Analysis Report, Siemens FMEA, and IEEE C57.125, "IEEE Guide for Investigation of Transformers."

Based upon the evidence from the teardown inspection, the team identified that varnish insulation was missing in some locations and what appeared to be mechanical scratches in the varnish were found under intact paper. Additionally, one of the scratched locations had carbonization, which could have been created by a partial discharge between strands while the transformer was operating. The indications mentioned did not exist on the same location of the intact phases. Therefore, the most probable cause of the transformer failure was determined to be a combination of the various insulation issues.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Dresden Nuclear Power Station, Unit 2	05000237	YEAR	SEQUENTIAL NUMBER	REV NO.	3 OF 3
		2014	- 002	- 02	

NARRATIVE

D. Safety Analysis:

The safety significance of this event was determined to be minimal based upon the availability of the required systems to safely shut down the reactor.

E. Corrective Actions:

Based upon the event and the investigation performed, the following corrective actions were taken or are planned to be taken:

1. The transformer was replaced with a transformer of a different design and from a different manufacturer.
2. Improved transformer manufacturing oversight will be instituted to ensure critical steps regarding physical inspections and lead manipulation/installation inspection are required to ensure quality insulation.
3. Procedures will be revised to ensure critical inspections during manufacturing processes are identified. Inspection plans will specify required holds for inspections by licensee, or designee.

F. Previous Occurrences:

No previous occurrences of this failure type were identified.

G. Component Failure Data:

Manufacturer	Model	S/N	Type
Siemens	ELIN	1731658	TDQ-A27D9K-99